REMARKS

The Office Action dated October 18, 2005 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1 and 3 have been amended. No new matter has been added, and no new issues are raised which require further consideration and/or search. Claims 5-16 and 23 have been cancelled. Claims 1, 3, 17, 19-22, 24, and 26-31 are submitted for consideration.

Claim 31 was rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Office Action alleges that the specification does not adequately teach how to linearize the output of the acceleration sensor with respect to a change in capacitance by selecting a number of pairs of electrodes and their orientations. We propose to traverse this rejection. Applicant asserts that paragraphs [0053] to [0055] detail how pairs of electrodes can be used to linearize the capacitance change. The specification also details how pairs of electrodes can be used as redundant sensors. In both cases, Applicant asserts that it would be clear, to one of ordinary skill in the art, how to uses the pairs of electrodes to linearize the capacitance change. M.P.E.P. 2164 details that "detailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention." As such, Applicant submits that the limitations in

claim 31 are fully enabled by the description and requests reconsideration and withdrawal of the rejection.

Claims 1, 3, 5, 7-10, 12-17, 19-24 and 26-31 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 1 was alleged to be indefinite since the limitation "the pairs of electrodes" at line 9 lacks proper antecedent basis. Claim 1 has been amended to overcome this rejection. Thus, Applicant requests that the rejection be withdrawn. Claim 3 was alleged to be vague and indefinite. Claim 3 has been amended to overcome this rejection. Thus, Applicant requests that this rejection also be withdrawn.

Claims 1, 3, 5, 7-10, 12-15 and 30 were rejected under 35 U.S.C. §102(b) as being anticipated by Negoro (U.S. Patent No. 5,892,154). Claims 17, 19-22, 24, 26-28 and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Negoro. With respect to the obviousness-type rejection, the Office Action alleges that having four or eight electrode pairs would have been obvious in view of Negoro. The rejections are traversed as being based on a reference that neither teaches nor suggests the novel combination of features clearly recited in independent claim 1.

Claim 1, upon which claims 3, 17, 19-22, 24, and 26-31 depend, recites a capacitive acceleration sensor comprising at least one pair of electrodes such, that the at least one pair of electrodes comprises a movable electrode, which is responsive to the acceleration, and at least one stationary plate portion. The at least one pair of electrodes

further comprises an axis of rotation forming an axis such that the movable electrode of the acceleration sensor is rigidly supported at the axis of rotation such, that the movable electrode is free to turn in a rotational motion about the axis of rotation, the position of the at least one pair of electrodes is selected symmetrically in relation to axes of symmetry, and that the at least one pair of electrodes comprises more than three pairs of electrodes used in the acceleration sensor, the acceleration sensor being a multi-axis acceleration sensor. The negative direction vectors of at least four movable electrodes of the more than three pairs of electrodes intersect at essentially one point.

The present invention is directed to an acceleration sensor that uses a movable electrode that rotates about an axis of rotation movable electrode. The change in capacitance of the electrode pairs is measured and the acceleration is determined therefrom. The specification details many embodiments where the number of pairs of electrodes and their orientations are selected to allow for greater characterization of acceleration.

As will be discussed below, the cited prior art reference of Negoro fails to disclose or suggest the elements of any of the presently pending claims.

Negoro is directed to an acceleration detection device that is capable of detecting accelerations in two or more directions. A movable electrode 7 is mounted on a cantilevered section of a beam 4, such that the movable electrode rotates about a center axis. Negoro discloses multiple embodiments, including a sensor with redundant

electrodes (Fig. 6), a sensor with a three-way symmetry (Fig. 8) and electrodes with variable shapes (Fig. 3A).

Applicant submits that Negoro simply does not teach or suggest each element or the combination of elements recited in the presently pending claims. Independent claim 1, upon which claims 3, 17, 19-22, 24, and 26-31 depend, recites, in part, that the negative direction vectors of at least four movable electrodes of the more than three pairs of electrodes intersect at essentially one point. There is no teaching of suggestion in Negoro of the negative direction vectors of at least four movable electrodes of the more than three pairs of electrodes intersect at essentially one point, as recited in claim 1. Therefore, Applicant respectfully asserts that the rejections under 35 U.S.C. §103(a) and 102(b) should be withdrawn because Negoro fails to teach or suggest each feature of claim 1 and hence, dependent claims 3, 17, 19-22, 24, and 26-31 thereon.

Claims 16, 23 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Negoro in view of Cole (U.S. Patent No. 4,736,629). The Office Action indicated that Negoro does not teach supporting the beams 4A and 4B at a central position 12 in Fig. 4 in lieu of the outer positions 6, such that the vectors in the "negative direction" intersect at essentially one point. Therefore, the Office Action combine the teachings of Negoro with the teachings of Cole to yield the combination of elements recited in claim 29. The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claim 1, upon which claim 29 depends.

Cole discloses an embodiment of an accelerometer, shown in figures 5 and 6, that is especially adapted for very large acceleration applications. The embodiment includes a plate member 140 that is mounted above and parallel to the planar surface 142 of a substrate 144 by a mounting system that includes pedestal 146. The pedestal extends for essentially the full width of the plate member and divides the plate member into a cantilevered beam 148 to one side of the pedestal and a second cantilevered beam 150 to the opposite side of the pedestal. Beams 140 and 150 flex toward and away from substrate in response to acceleration normal to surface 142. Fixed plate 156 is formed in substrate 144 underlying beam 148 and fixed plate 158 is formed in substrate 144 underlying beam 150.

Cole does not cure the deficiencies of Negoro with respect to claim 1, upon which claims 29 depend. Specifically, Cole does not teach or suggest the negative direction vectors of at least four movable electrodes of the more than three pairs of electrodes intersect at essentially one point, as recited in claim 1. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Negoro nor Cole, whether taken singly or combined, teaches or suggests each feature of claim 1 and hence, dependent claim 29 thereon.

As noted previously, claims 1, 3, 17, 19-22, 24, and 26-31 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1, 3, 17, 19-22, 24, and 26-31 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Enclosures: Petition for Extension of Time